

Alg2CP Unit 03 (Chapter 4): Quadratic Equations

Content Area:	Math
Course(s):	Level 1 Engineering Drawing, Algebra 2 CP, Algebra 2 A, Algebra 2 H
Time Period:	Marking Period 1
Length:	2 weeks
Status:	Published

Unit Introduction

Standards

MA.F-BF.A.1	Write a function that describes a relationship between two quantities.
MA.F-BF.B.5	Use the inverse relationship between exponents and logarithms to solve problems involving logarithms and exponents.
MA.F-IF.B.4	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.
MA.F-IF.B.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.
MA.F-IF.B.6	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.
MA.F-IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
MA.F-IF.C.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
MA.A-APR.B.3	Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.
MA.A-CED.A.1	Create equations and inequalities in one variable and use them to solve problems.
MA.A-CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
MA.A-REI.B.4b	Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b .
MA.A-SSE.A.2	Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.
MA.A-SSE.A.1a	Interpret parts of an expression, such as terms, factors, and coefficients.

Essential Questions

- How are the real solutions of a quadratic equation related to the graph of the related quadratic function?
- How is any quadratic function related to the parent quadratic function $y=x^2$?

- What are the advantages of a quadratic function in vertex form? In standard form?

Content

- Sec 4.1 - Quadratic Functions and Transformations (pg. 194)
- Sec 4.2 - Standard Form of a Quadratic Function (pg. 202)
- Sec 4.3 - Modeling With Quadratic Functions (pg. 209)
- Sec 4.4 - Factoring Quadratic Expressions (pg. 216)
- Sec 4.5 - Quadratic Equations (pg. 226)
- Sec 4.7 - Quadratic Formula (pg. 240)

Skills

- Find zeros of a quadratic function from a graph
- Graph a quadratic function in standard form
- Graph a quadratic function in vertex form
- Identify axis of symmetry
- Identify maximum and minimum
- Identify transformations on a quadratic function
- Identify vertex
- Solve quadratic functions by factoring
- Use graphing calculators and technology where appropriate
- Use relevant vocabulary, notations, and symbols when appropriate